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## Transition to University under Communism and after Its Demise\* The Role of Socio-economic Background in the Transition between Secondary and Tertiary Education in the Czech Republic 1948–1998

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**Abstract:** The aim of this study is to assess the most recent trend in inequality in access to tertiary education in the Czech Republic. The authors put forward the hypothesis claiming that the period of stable inequalities in the years 1948–89 was followed by a period of growing inequalities during the post-communist transformation (1989–1999). The study focuses primarily on the cultural and socio-economic (class) dimensions of social origin and gender and their net effect on success in the transition between secondary and tertiary education. Theoretically the paper draws primarily on the work of Raftery and Hout [1996], Hanley and McKeever [1997], who claim that the chances of attaining higher education among individuals from families with a low social status can only increase on the condition that the demand for the given level of education has first of all been satiated among all the strata disposing of social and cultural capital. Another important theory they build on is the *theory of rational action* proposed by John Goldthorpe and Richard Breen [Goldthorpe 1996, Breen and Goldthorpe 1997]. The principal hypothesis (inequality has grown) is tested using log-linear analysis applied on the data from various surveys carried out between 1998–2000, merged into one data set. The authors construct several models of the influence of social origin on the chances of making a successful transition between secondary and tertiary education in the years between 1948 and 1999. The initial hypothesis of the growing effect of class origin on this transition in the period after 1989 has been confirmed. One of the strongest explanations for this trend is the insufficient expansion of the tertiary sector of education, which is incapable of satisfying the continually growing aspiration and corresponding demand for higher education in circumstances where socio-economic inequalities are on the rise.

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At the very early stages of the post-communist transformation, most of the formerly communist countries launched reforms of their tertiary educational systems pursuing two major goals: to re-establish academic freedoms and to create conditions for the expansion of tertiary education. From the sociological point of view, it was particularly the expansion of tertiary education that attracted the attention of scholars and policy-makers because it was assumed that the rapid growth of educational opportunities would prevent the growing socio-economic inequality and the formation of social classes from causing a further increase in the already high level of inequality in access to higher education.

After a decade of post-communist development, sociologists should be able to offer solid empirical evidence of the actual effects reforms and policies (or the lack of them) have had on the development of inequalities in the odds of attaining higher education. Particular emphasis should be placed on the role of gender and socio-economic background, because these two dimensions of educational inequality were the primary targets of the communist educational policy agenda; unlike the post-communist governments, which left them to quite spontaneous development, with no consistent policies for addressing the relatively high level of inequality inherited from the socialist era.

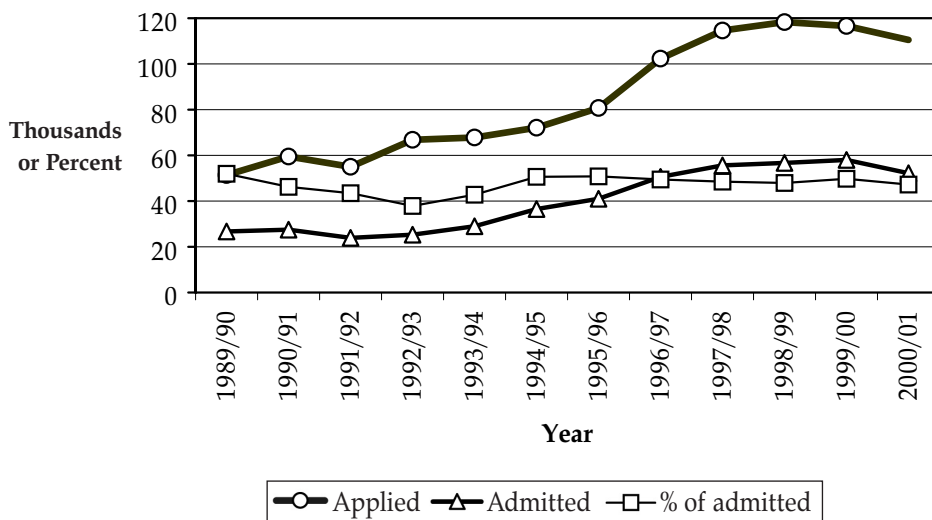
The primary aim of this paper is to compare the development of inequality in access to higher education under the *communist* and *post-communist* regimes by testing hypotheses on the effect of various dimensions of socio-economic background and gender on the odds of making the transition between secondary and tertiary education. Though we focus primarily on the Czech Republic, the comparison of the two periods may contribute to a better understanding of the more general question of how the two historically unique types of social change (transition to socialism, post-communist transformation) shaped the inequality in access to higher education. As shown in a number of recent analyses [see e.g. Večerník 2001, Matějů and Kreidl 2001], the role of education in social stratification has markedly changed. Most importantly, a true revolution took place with regard to the economic returns on higher education. For instance, in the Czech Republic, which ranked among the most egalitarian countries before 1989, the effect of education on personal income doubled between 1988 and 1996 [Večerník 2001].<sup>1</sup>

Overall democratisation and significant growth in returns to higher education generated a fast growth in educational aspirations. Although the number of students rose by almost 60 percent between 1989 and 2001, the offer of educational opportu-

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<sup>1</sup> While in 1988 each year of education brought a 'premium' of a 4% salary increase, in 1996 this premium had reached 8%. During the same period, the ratio of the wage of a person with a university education and that of a person holding a secondary school diploma increased from 1.48 to 2.37. Similar processes took place in other post-communist countries. As far as cross-national comparisons are concerned, OECD data show that the wage premium for higher education in post-communist countries is actually higher than in a number of more developed countries. The unsaturated demand for a labour force with higher education is the most likely explanation of why in transition countries people with tertiary education are *relatively* (i.e. in comparison with the less educated) better paid than those in more advanced countries.

**Figure 1. Number of applicants for tertiary education, admitted students, and ratio of admitted to applied after 1989 in the Czech Republic**



Source: ÚIV (Institute for Information in Education).

nities was too low to meet the steeply rising demand for tertiary education. As shown in Figure 1, the chance of being admitted did not change, it remained at about 50 percent. Owing to the rapid growth in the number of secondary school graduates and the steady accumulation of unsatisfied demand, the transition from secondary to tertiary education became the most critical moment in an educational career.

The growing *economic value* of education resulting in an increase of wage differentials, and the growing consistency between education, prestige, social status and self-perception [Matějů and Kreidl 2001] indicate that higher education has become a more valued asset than it was during socialism. This important change may increase sensitivity to the still limited offer of educational opportunities and especially to the growth of class inequality in access to higher education. Consequently, the issue of *equity in access to education* has become a true social and political issue that sociologists should be able to address, not only on the theoretical level, but also on empirical grounds.

### The development of educational inequality in a theoretical perspective

In order to frame a hypothesis on the development of inequality in access to higher education after the fall of communism in a broader theoretical context, the principal hypotheses concerning the development of inequality in access to higher edu-

cation should be reviewed. We found six theoretical perspectives to be particularly relevant in this context: the modernisation theory, the cultural reproduction theory, the theory of 'maximally maintained' inequality, the rational action theory, the socialist transformation hypothesis, and the theory of trajectory maintenance.

The central argument of the *modernisation theory* [Blau and Duncan 1967, Featherman and Hauser 1978, Treiman 1970] is that the effect of social origin on educational attainment is declining over time as a consequence of industrialisation. The theory argues that industrialisation brought about an increasing demand for a skilled labour force, as well as a change in the principles underlying the allocation of individuals to occupational positions. As a consequence, the growth in educational opportunities and the change in the principles behind the allocation of education, forced by the demand for an effective functioning of the social system, led to a decline in the effect of social origin on educational attainment. The first tests of the modernisation theory by Blau and Duncan [1967] and Featherman and Hauser [1978] confirmed that, as far as the United States are concerned, the effect of social origin on educational attainment had declined and a significant part of the class inequality in access to higher education could be explained by *socio-psychological* rather than *socio-economic* factors [Sewell 1971, Sewell and Hauser 1975, Hauser, Tsai and Sewell 1983].

The *cultural reproduction theory* challenges the modernisation theory on the deepest grounds. It claims that because education in modern industrialised societies has become the most important channel to economic success and, at the same time, the meritocratic ideology has developed into a dominant norm of distributive justice, privileged social classes have abandoned using clearly ascriptive assets in securing advantages for their children and have developed new strategies for passing advantages to the next generation, which are compatible with the meritocratic ideology. The theory of various forms of capital, developed by Bourdieu [Bourdieu 1973, 1986], initiated a strong stream of analytical work attempting to assess the role of the transmission of *cultural* resources in the intergenerational transmission of *socio-economic* advantages and the reproduction of inequality. Thus, the maintenance of socio-economic privileges does not take place at the lowest levels of the educational system, but mainly at the level of post-secondary education. Therefore, the effect of social origin decreased only in the initial transitions.

Among the most successful attempts to expose this theory to empirical tests are the analyses that were carried out by Paul De Graaf [1986] and Paul DiMaggio [1982]. Both of them separated the *economic* and *cultural* components of social origin and showed that the effect of family *cultural* resources on educational attainment is independent of the *economic* situation of the family background. Moreover, De Graaf found that, at least in the Netherlands, the *stability* in the overall effect of the socio-economic status of the family background on the educational attainment of the children can be explained by two overlapping processes with opposite effects: a decrease in the effect of *economic* resources and an increase in the effect of *cultural* resources. Di Maggio was able to demonstrate that investments in cultural capital represent a specific element of the *status* culture, which predetermines the educational achievements of children, to a high degree independently of *class* position.

Interestingly enough, the attempt to show that socialism led to a decrease in the effect of socio-economic background on the educational attainment of children failed. Although Matějů and Peschar [1990] found that, at the end of the 1980s, the overall effect of family socio-economic status on the educational attainment of children was weaker in Czechoslovakia than in the Netherlands, the effect of its *economic* dimension was in fact stronger in Czechoslovakia than in the Netherlands.

Raftery and Hout [1993] developed the concept of *maximally maintained inequality* in education. According to this hypothesis, privileged social classes have the sufficient capacity to maintain advantages in access to higher education. Therefore, the chances of low-status groups can increase only when the demand for a given level of education is saturated among children who are better-off. The probability of low-status children making the transition can actually increase only with a further expansion of educational opportunities and a softening of the selection criteria (removing tuition fees, lowering entry requirements etc.). Raftery and Hout were able to corroborate their hypothesis on Irish data covering the period between 1921 and 1975. The results of the analysis showed that only the expansion of educational opportunities led to an increase in the chances for higher education among disadvantaged social groups, and did so mainly through a softening of the selection criteria (so as to accommodate the largest possible number of students), rather than through a change in the principles of educational stratification. They concluded that, in spite of a certain reduction in the effect of class on educational attainment, class inequality was not removed, but rather shifted towards higher levels of education.

The most recent attempt to explain the persisting class inequality in the odds of attaining higher levels of education in modern industrialised countries is the *theory of rational action* proposed by John Goldthorpe and Richard Breen [Goldthorpe 1996, Breen and Goldthorpe 1997]. Goldthorpe's approach to the problem of the persistence of class inequality in educational attainment is part of his effort to reorient the class analysis away from both the Marxist and liberal traditions – oriented primarily on macro-social explanations of the dynamics of class structure (class *formation* in the Marxist tradition, class *decomposition* in liberal theories) – towards a theoretically well-grounded explanation of the prevailing empirical evidence of the stability of class differentials in life-chances. Since education plays a key role in determining the life-chances of individuals, it is the marked temporal stability in the odds of attaining higher education that needs a plausible theoretical explanation, which – according to Goldthorpe – can hardly be found unless it takes into account the *micro-social* foundations of *macro-social* regularities. Therefore, in order to understand the persisting inequality, one has to take up the *notion of rationality*, assuming that social actors have goals and alternative means of pursuing them. In choosing among the means, the actors tend to assess costs, risks and benefits, rather than just follow social or cultural norms or values typical for the particular class they belong to [Goldthorpe 1996:485].

As far as class-determined educational careers are concerned, Goldthorpe's rational action theory is in fact a further elaboration of Boudon's theory of the reproduction of educational inequality, based on the assumption that a school career



is a sequence of decisions in which a social actor evaluates and compares the benefits, costs and risks of possible choices among various educational tracks, between staying in school or dropping out etc. [Boudon 1974]. Goldthorpe accepted Boudon's distinction between *primary* effects (ability, performance in school) and *secondary* effects (factors coming into play at various branching points of the educational system) and developed a theoretical and analytical approach based on the assumption that, "it is on secondary rather than primary effects that attention must center if the question of change, or rather absence of change, in class differentials under conditions of educational expansion is to be effectively addressed" [Goldthorpe 1996:491].

This approach is consistent with another explicit assumption that educational expansion leads to the weakening of the role of primary factors (selectivity of successive transitions in terms of ability is reduced). This brings ever higher numbers of children into the competition for more ambitious educational options. Class differentials in taking up these options persist because only little change has occurred in the relativities of cost-benefit evaluations made by individuals (children and parents) in different class situations. In other words, though the relative benefit of achieving higher education from an underprivileged class position is higher (expected upward mobility), the relative costs are also higher (costs of education relative to family income), and so is the risk of failure (be it dropping out, or obstacles in achieving an expected occupational position). All this applies regardless of the person's position in the scale defining primary effects (ability, actual school performance).

The above theories, though very often based on a country-specific situation or data analysis, were striving for general validity. The same cannot be claimed with regard to the various attempts to explain the development of inequality in access to higher education in formerly communist countries. The reason is that these systems were governed by different *types of mechanisms* and very specific *systems of relationships*, created and maintained by the authoritarian regime and its specific policies.

The hypothesis of *socialist transformation* claims that the socialist reforms of educational systems, and the corresponding policies (particularly the implementation of the so-called quota system), brought about an initial reduction in the effects of social origin on educational attainment. However, as soon as the new elite secured privileges for themselves and took control of the educational system, they ensured educational advantages for their own children. For this reason, in the later years of the socialist regimes, the effect of social origin grew to its original, pre-socialist level [see e.g. Matějů 1986, 1993].

Hanley [2001] challenged this hypothesis and attributed the initial reduction in the effect of social origin on educational attainment to the expansion of the educational system, questioning the real effect of the quota system on the admission processes at the secondary and post-secondary level. However, his analysis confirmed that the selection on the basis of political criteria was present during the so-called normalisation period following the Soviet invasion in 1968. The hypothesis

concerning the role of redistribution policies, including the quota system, was also supported by Kreidl [2001], who showed that the effect of the socio-economic status of parents on the success in the transition from lower to upper secondary and technical schools decreased in the years 1948–1953.

The *theory of trajectory maintenance*, which also refers specifically to the former socialist countries, claims that the members of the pre-communist elites (bureaucracy and professionals) were able to pass privileges to their children even under the new regime. They achieved this aim primarily by making use of their social and cultural capital. For this reason, inequalities in the allocation of education did not decline [Hanley and McKeever 1997]. This hypothesis in fact applies the theory of cultural reproduction to the socialist system. Also, Wong [1998] found a strong effect in the various types of capital that individual families have and employ to secure the desired education for their offspring. He showed that it was social capital, such as membership in the Communist Party, that played an important role as a mediator of intergenerational inequalities.

Gerber and Hout [1995] reached a similar conclusion for Russia, where – like in other socialist countries – the strictly controlled growth of opportunities in secondary and post-secondary education led to enormous pressure for entry into both secondary schools and universities. Thus, mainly owing to the excess demand and enormous competition, and despite the strong political control over the selection process, class differentials in the odds of attaining post-secondary education did not change through three post-war cohorts. Similar results came out of the analyses carried out on Czechoslovak and Hungarian data [Boguszak, Matějů and Peschar 1990, Simkus and Andorka 1982].

In the light of what has been said above, two competing hypotheses concerning the development of inequality in access to higher education during the socialist regime can be formulated for the analysis. The first one refers to the ‘socialist transformation’ hypothesis, which found support in the data from the Czechoslovak stratification survey carried out in 1984 [Matějů 1993]. If this hypothesis is true, we should be able to find a significant reduction of differentials in the odds of making a transition between secondary and tertiary education among individuals of different socio-economic backgrounds. The second hypothesis concerning this stage of development, suggested by Hanley and McKeever [1997], and supported by Wong [1998] in the case of the former Czechoslovakia, and Gerber and Hout [1995] in that of Russia, rejects any change in the effect of socio-economic background caused by the socialist reforms and corresponding policies.

As for the change in educational inequality during the post-communist transformation, all the available evidence leads us to the hypothesis that class differentials in the odds of success in the transition between secondary and tertiary education increased after 1989. Let us summarise the arguments in support of this hypothesis:

a) the tendency to maintain a traditional ‘unitary system’ (in contrast to the binary system adopted in the United States and most European countries) and the



deepening austerity of higher education institutions (extreme dependence on limited public funds) pose serious obstacles to the further expansion of educational opportunities;

b) growing educational aspirations and a steady growth in the number of secondary education graduates, on the one hand, and constraints on the growth of educational opportunities at the tertiary level, on the other hand, result in an excessive demand and a high number of refusals in the admission process;

c) for the above reasons, the transition between the secondary and the tertiary level of education has become extremely competitive;

d) the post-communist transformation has brought about a significant increase in the economic inequality in the formation of genuine social classes;

e) the process of objective change in the class structure transformed into the formation of subjectively defined groups of 'winners' and 'losers' in the transformation, making the new property class (owners of enterprises, the self-employed) and professionals the typical winners, leaving skilled and unskilled workers among the typical losers [Matějů 1999];

f) the perceived role of education in building strategies for getting ahead has grown significantly; achieving higher education has gradually developed into a principal strategy for life-success;

g) all these processes that took place in the social stratification occurring during the post-communist transformation brought about a growing awareness of the assessments of the costs, risks and benefits of the decisions concerning the educational transition between secondary and tertiary education, particularly among the 'losers' of the transition, represented primarily by large segments of the working class (semi-skilled and unskilled workers).

Taking into consideration all the above arguments, we propose to test the following hypotheses:

H1: The socialist-regime period did not introduce any change in the effect of socio-economic background on the odds of making the transition between secondary and tertiary education. The only significant change was the reduction of inequality between men and women that occurred as a consequence of redistribution policies.

H2: The post-communist transformation brought a significant increase in the effect of social background on the odds of making the transition between secondary and tertiary education. It was primarily due to the increasing effect of the father's social class (representing the socio-economic dimension of social stratification), while the effect of the father's education (the cultural dimension of social stratification) remained stable. The effect of gender remained stable.

H3: The increase of class differentials in the odds of making the transition between secondary and tertiary education was caused in particular by the widening gap between the typical losers of the transformation (semi-skilled and unskilled workers) and other classes.

## **The data and the strategy for the analysis**

In order to obtain a sufficiently large number of cases for a cohort analysis allowing a comparison of the pre-socialist, socialist and post-socialist stages of development of the Czech Republic, the data from three surveys – namely, the Transformation of Social Structure Survey 1991 (TSS-91), the Second International Adult Literacy Survey 1998 (SIALS-98), and the International Social Survey Program – survey module on Social Inequality 1999 (ISSP-99) – were merged into one analytical file. All these surveys were carried out on random samples produced by two-stage stratified random sampling procedures.<sup>2</sup> The original effective sample sizes were: TSS-91 1,870 cases (in the Czech part of former Czechoslovakia), SIALS-98 3,132 cases, and ISSP-99 1,834 cases. The analytical data file had 6,740 cases.

The variables created for the analyses were: COH (the year when the respondent reached 18 years of age: 1. before 1948, 1. 1948 – 1964, 3. 1965 – 1974, 4. 1975 – 1989, 5. 1990 – 1999), SEX (1. male, 2. female), FED3 (father's education – the highest achieved level of education: 1. lower secondary or lower, 2. higher secondary, 3. tertiary), RED3 (respondent's education – the highest achieved level of education: 1. lower secondary or lower, 2. higher secondary, 3. tertiary),<sup>3</sup> FCL4 (father's class at the time the respondent was 16 years old: 1. semi-skilled and unskilled workers, farm workers, 2. skilled workers, 3. routine non-manual occupations, 4. professionals – including self-employed).<sup>4</sup> The distributions of the key variables are shown in the Appendix.

Because of the dichotomous character of the dependent variable (success – failure in the transition), logit models were applied to test the hypotheses. This strategy allowed the transformation of categorical variables into a set of special contrast variables<sup>5</sup> representing individual hypotheses. For example, replacing the variable 'cohort' with the 'repeated' contrasts made it possible to focus on differences in the odds of success among cohorts by making explicit assumptions that some of the adjacent cohorts do not differ significantly from each other. Similarly, replacing the variable 'father's education' by orthogonal polynomial contrasts (linear and quadratic) made it possible to test the hypothesis that the effect of the father's educa-

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<sup>2</sup> Detailed information about TSS-91 and ISSP-99 surveys and corresponding data files can be found in the Sociological Data Archive (SDA), Institute of Sociology, Academy of Sciences of the Czech Republic ([www.archiv.soc.cas.cz](http://www.archiv.soc.cas.cz)). The data from TSS-91 are stored as data file # 0126, the ISSP-99 survey is stored under # 0016. Information about SIALS can be obtained at the website of ETS Princeton: <http://www.ets.org/textonly/all/ials.html/>.

<sup>3</sup> Since the analysis focused primarily on the transition between secondary and tertiary education, in all surveys respondents older than 19 years reporting completed secondary education and the current status of a 'student' were assigned RED3=3 (tertiary education).

<sup>4</sup> It is the reduced version of a standard EGP class schema. The reduction of the number of categories was necessary to avoid extremely low frequencies in multiple classifications.

<sup>5</sup> See Haberman [1979] for a description of this methodology.

tion on the log-odds of success is linear just by declaring the respective contrast to be linear.

The goodness of fit of each logit model was assessed by a likelihood ratio test and by an evaluation of the adjusted residuals for individual cells of the multiple classification (i.e. by comparing observed frequencies with those derived from the given model). All the presented models showed very high levels of goodness of fit in both criteria.

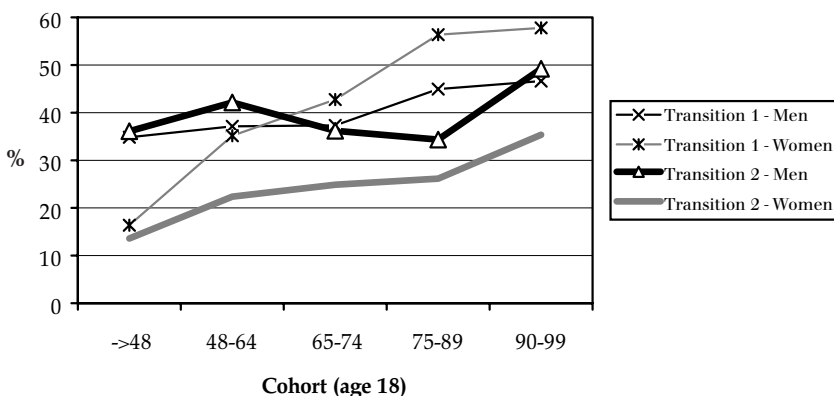
## The results of the analysis

### *a) Basic trends in opportunity and participation*

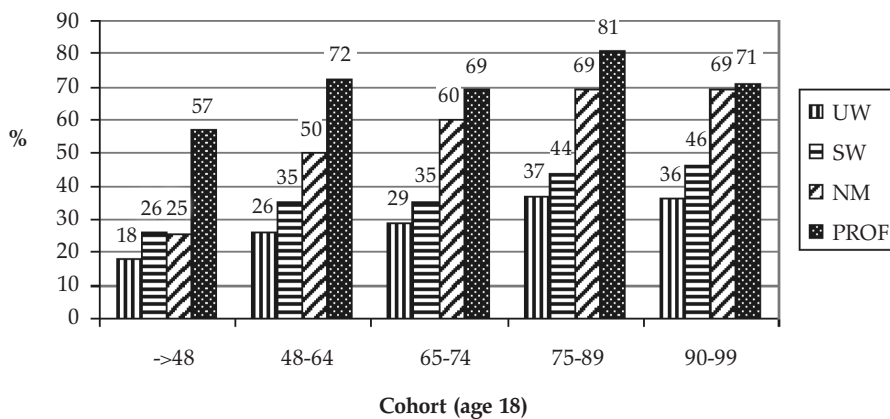
The trends in two main educational transitions, as portrayed by the survey data, match the statistical data presented in the first part of the chapter. As shown in Table A1 in the Appendix, educational opportunities at the upper secondary and tertiary level grew only very slowly during the past five decades. A marked growth in the probability of success in the transition between upper secondary and tertiary education after 1989 was partly due to the slowdown of the growth in the number of upper secondary school graduates.

The development of differentials between men and women in the odds of making the first and second transition shows patterns typical for formerly socialist countries. As for the first transition (from primary to secondary education), the first period of socialist development brought a massive redistribution of educational op-

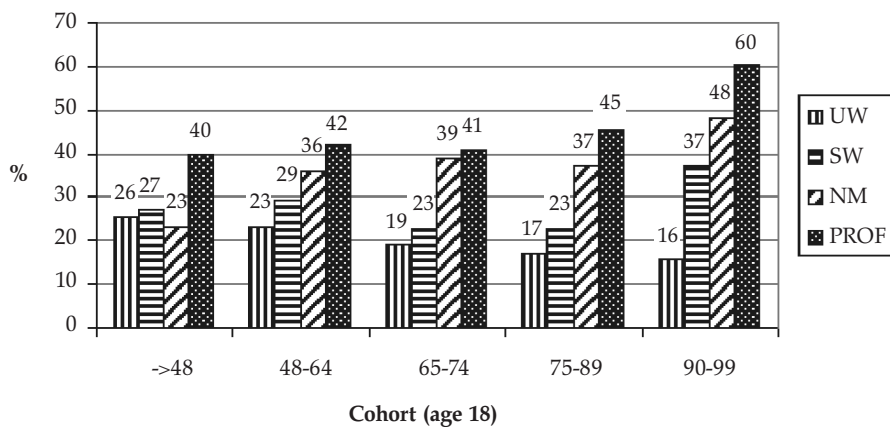
**Figure 2. Proportion of individuals who succeeded in the first and second transition by gender and cohort**



**Figure 3. Proportion of individuals who succeeded in the first transition by father's class and cohort**



**Figure 4. Proportion of individuals who succeeded in the second transition by father's class and cohort**



opportunities from men to women. Therefore, the odds of women making this transition exceeded those of men. In further development, the odds for men began to grow, but not enough to reach the level of women (Figure 2). As far as the second transition is concerned, while women experienced a steady growth of odds under the socialist regime and the odds for men decreased, the odds between men and women did not flip-over in favour of women.

The limited growth of opportunities during the period under study did not create favourable conditions for a marked reduction of class differentials in the odds of making the transition from secondary to tertiary education, despite the fact that the class differentials of success in the first transition (achieving upper secondary education) diminished, mainly due to the improving relative chances of individuals of working class origin (Figure 3). However, this change did not bring about a similar development in the subsequent transition (from upper secondary to tertiary education). The results displayed in Figure 4 indicate that the trend was just the opposite: the increasing participation of lower social classes in upper secondary education led to an increase in the competitiveness of the subsequent transition, in which lower social classes tended to lose. The odds of making the transition for unskilled and semi-skilled workers (UW) actually dropped, from 26 percent in the pre-socialist period to 16 percent for the last two cohorts (the last socialist and the first post-socialist cohort), while it grew rapidly for non-manual workers and professionals, who profited most from the growth of educational opportunities at the tertiary level. The problem of unskilled and semi-skilled workers appears even more serious when we take into account the size of the class: on average 36 percent of the respondents reported being of this particular class origin (38 percent in the first cohort, 32 percent in the last one).<sup>6</sup> Moreover, in the youngest cohort about 16 percent of fathers belonging to this class reported having upper secondary education.

The social class showing the most significant improvement in the chances of success in the second transition was that of routine non-manuals. The odds of children from this background grew, from 23 percent in the first cohort (actually below the two classes of manual workers) to 48 percent in the last cohort (significantly above the odds of individuals of working class origin). As far as the post-socialist stage of development is concerned, the real winner in this competition were the children of skilled workers (the chances increased from 23 percent to 37 percent, i.e. by factor 1.6), and professionals (the chances increased from 45 percent to 60 percent, i.e. by factor 1.3). Thus, the real losers were those individuals from an unskilled or semi-skilled worker's background. The odds of their success dropped both in real and relative terms (from 17 to 16 percent in real terms; the odds between unskilled and semi-skilled workers on the one hand and professionals on the other dropped from 0.37 to 0.26).

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<sup>6</sup> See Appendix for the distribution of variable FCL4.

*b) Testing the hypotheses concerning the development of inequality*

The hypotheses on equalities in the chances for success in the transition from secondary to tertiary education were tested using three logit models (Model I, Model II and Model III).

Model I tests, first of all, the general hypothesis of the development of the odds of individual cohorts making the transition from secondary to tertiary education, then it tests the hypothesis on the development of inequalities between men and women (H1), and, finally, the hypothesis on the stability of the effect of the father's education (H2). The following equality constraints on individual interactive effects were introduced into the model to test these hypotheses:

a) the development of the odds of making the transition from secondary to tertiary education can be modelled as follows: there was no significant change in the overall chances of the first cohort (i.e. till 1948) and the second cohort (1949–1964) when the socialist model of education was being formed (this does not apply, however, to the differences between men and women); during the period of 1965–1989 (third and fourth cohorts) a general slowdown took place (especially with regard to men), and the overall odds increased significantly for the fifth cohort;

b) as a result of a significant redistribution of educational opportunities in favour of women, the effect of gender changed between the second and third cohort, but remained stable thereafter;

c) the effect of the father's education remained unchanged throughout the monitored period.

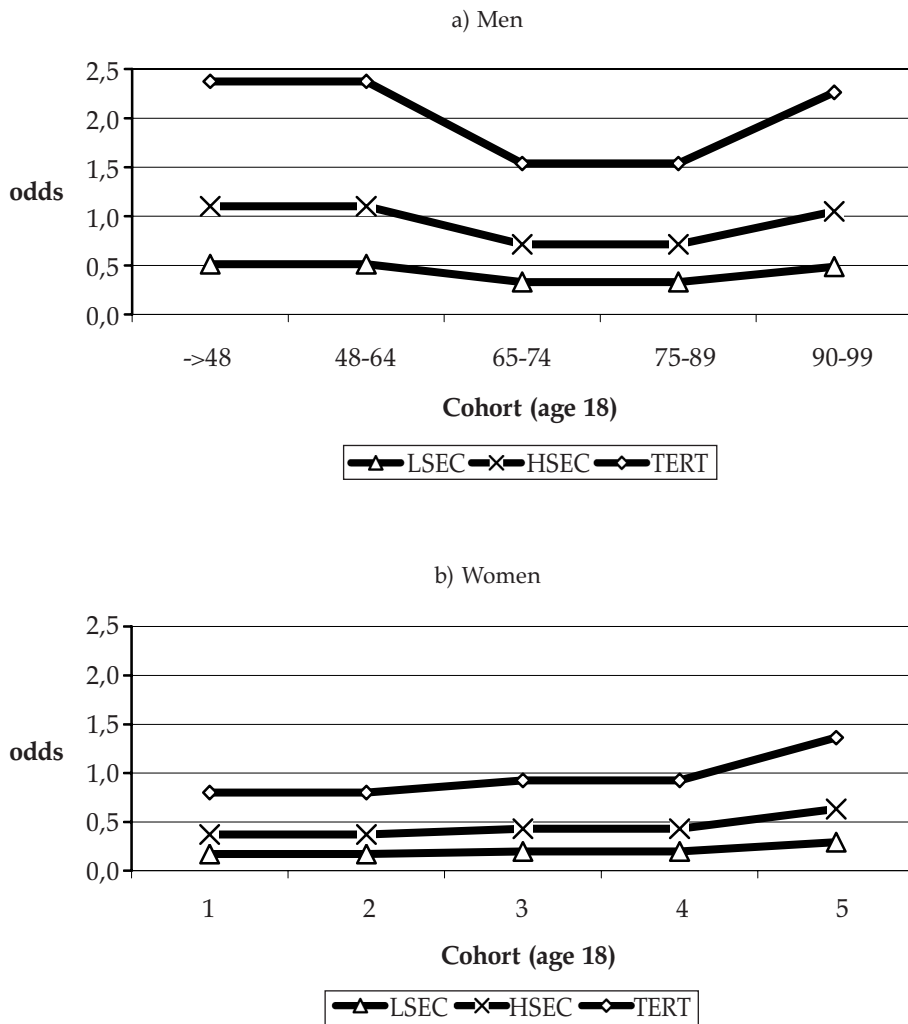
The high level of the goodness of fit of this model ( $L^2 = 20.8$ ,  $df = 24$ ,  $p = 0.649$ ) makes it possible to represent the development of inequality in the odds of making the transition between secondary and tertiary education (Figures 5 a, b) and the corresponding odds ratios between individuals of different genders and between groups defined by the father's education calculated from the expected frequencies (Figure 6).

Figures 5a and 5b illustrate that the relatively significant drop in the odds which occurred between the second and third cohort of men (particularly in cases where their fathers had attained tertiary education) was not accompanied by a corresponding growth in the odds of women. The hypothesis that, under the socialist regime, when the overall growth in odds was limited, the odds of women attaining higher levels of education was 'paid for' by a reduction in the educational mobility of men [Boguszak, Matějů and Peschar 1990], is gaining significant support. Thus a marked increase in the odds of making the transition to tertiary education for both genders took place only during the period of the last cohort, admitted to universities only after 1989.

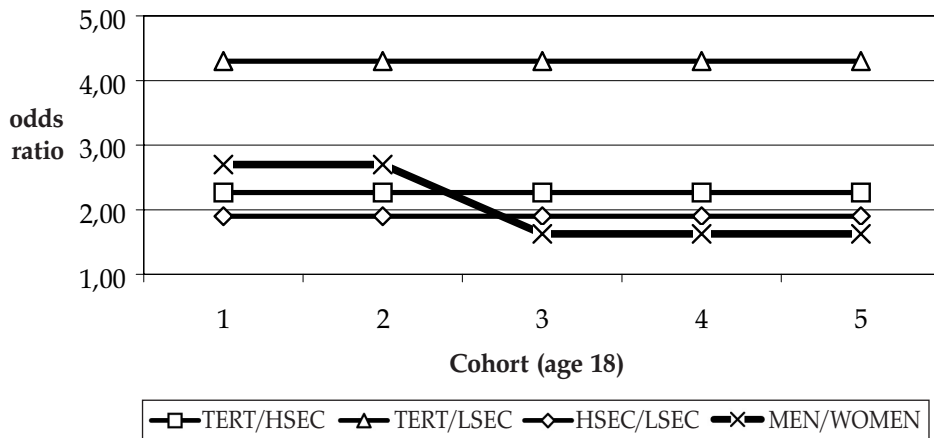
As illustrated in Figure 6, the statistically significant drop in the inequalities between men and women contrasts with the inequalities among individuals with fathers of different levels of education. The odds ratio of children whose fathers had secondary and tertiary education remained constant for men and women throughout the monitored period (2.16). The same applies to the inequalities among individuals whose fathers attained tertiary education and those whose fathers attained



**Figure 5. Odds for the second transition by father's education predicted by Model I**



**Figure 6. Odds ratios for the second transition between men and women and between groups defined by father's education (FED): based on odds predicted by Model I (odds ratios are identical for men and women)**



no more than lower secondary education (an apprenticeship): even in this case the odds ratio was constant during the whole period, but, naturally, much higher (4.65).

Model II was designed to test the hypothesis concerning the development of social origin as represented by the father's social class. This model retains all the constraints imposed on the interaction terms from the previous model, with the exception of the interaction between the father's cohort and social class, because the model assuming this interaction to be constant over time returned statistically unsatisfactory fit. However, when – in compliance with hypothesis H2 – the interaction term allowing a change in the father's social class in the last cohort was introduced, Model II showed a high level of goodness of fit ( $L^2 = 26.1$ ,  $df = 31$ ,  $p = 0.718$ ).<sup>7</sup>

Figure 7, which shows all the odds ratios, convincingly confirms two aspects:

a) in line with hypothesis H2, the effect of social origin as represented by the father's social class did not change throughout the period of the socialist regime;

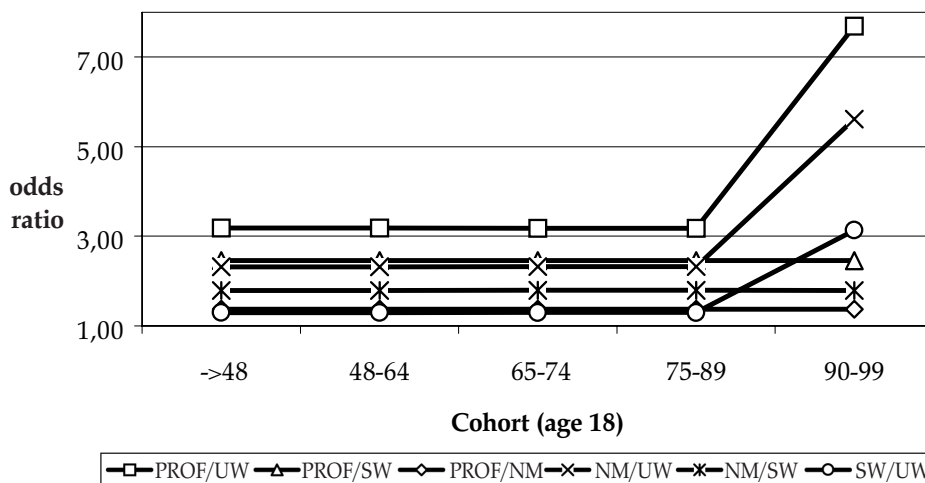
b) also, in line with hypothesis H2, a significant increase in inequalities caused by the socio-economic background as represented by the father's social class occurred only during the post-communist transformation;

c) in line with hypothesis H3, this development was caused primarily by the significant decrease in the relative odds of unskilled and semi-skilled workers' children; the odds ratios between the other social classes remained unchanged throughout the whole period (in most cases relatively high).

The test of a model in which both variables representing social origin (father's education, father's social class) were introduced generated very unstable results due

<sup>7</sup> A formal specification of the logit Model II is included in the Appendix.

Figure 7. Odds ratios for the second transition between groups defined by father's class (FCL4) based on the odds predicted by Model II (odds ratios are identical for men and women)



to very low or zero frequencies in certain cells of multi-dimensional classifications. In order to assess whether socio-economic background as represented by the father's social class has an effect independent of the cultural dimension of the social origin as represented by the father's education, Model III was designed, in which both the father's education and social class were introduced, but in which both these variables were reduced to two categories. The father's education was re-coded to separate from the rest the relatively large group of individuals who did not attain higher secondary education (FED2: 1. lower secondary or lower, 2. higher secondary and higher). Similarly, in the case of the father's social class, a group of unskilled and semi-skilled workers was separated from the rest (FCL2: 1. unskilled and semi-skilled workers, 2. rest).

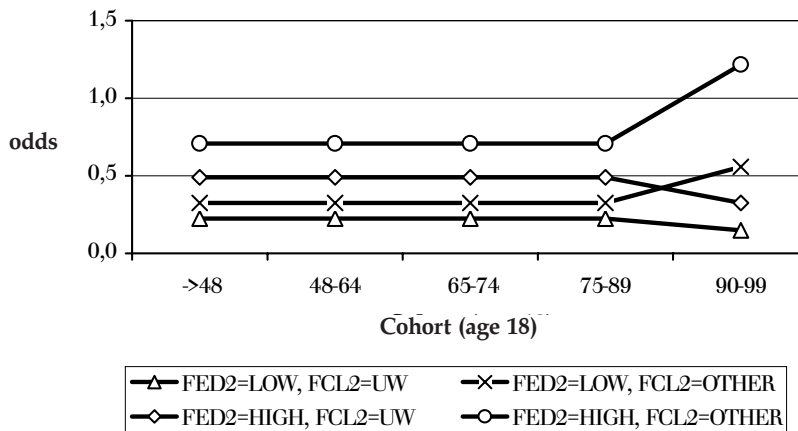
Using these variables, we built the model allowing an overall change in the odds of making the transition between secondary and tertiary education only for the last cohort, and not allowing any change in the effect of the father's education, while allowing again a change in the effect of the father's class only for the last cohort.<sup>8</sup> This model returned a very high level of goodness of fit with the original data ( $L^2 = 12.7$ ,  $df = 15$ ,  $p = 0.627$ ). Figure 8, containing key odds ratios, illustrates clearly that:

a) while during the period of the socialist regime the father's education increased the odds of making the relevant transition, its effect did not surpass the dominant effect of the father's class, which remained unchanged;

<sup>8</sup> A formal specification of the logit Model III is included in the Appendix.

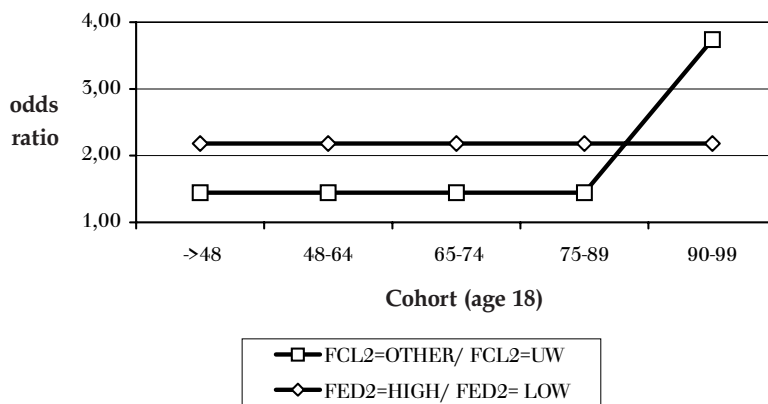
**Figure 8. Odds for the second transition from Model III**

Compared groups defined by two levels of father's education: at most lower secondary (FED2=LOW) or at least upper secondary (FED2=HIGH), and two categories of father's class: unskilled and semi-skilled worker (FCL2=UW) or higher social classes (FCL2=OTHER)



**Figure 9. Odds ratios for the second transition from Model III**

Compared groups defined by two levels of father's education: at most lower secondary (FED2=LOW) or at least upper secondary (FED2=HIGH), and two categories of father's class: unskilled and semi-skilled worker (FCL2=UW) or higher social classes (FCL2=OTHER)



Notes:

1. Odds ratios for the second transition among individuals from the two different social backgrounds defined by father's class (FCL2=OTHER/FCL2=UW) are identical for the two categories of father's education (FED2=LOW and FED2=HIGH)
2. Odds ratios for the second transition among individuals from the two different social backgrounds defined by father's education (FED2=HIGH/FED2=LOW) are identical for the two categories of father's class (FCL2=UW and FCL2=OTHER)

b) during the period starting in 1989, the effect of the father's education remained constant, while the effect of the father's class increased sharply (as confirmed in Figure 9).

## Conclusions

At the outset, we formulated a hypothesis according to which the period of *persisting inequality* during the times of socialism was followed by a period of *increasing inequality* during the post-communist transformation.

The analysis of the extensive set of data acquired by merging data files from surveys carried out after 1989 focused on testing three hypotheses. The first one was derived from the theory known as 'maximally maintained inequality', as presented by Raftery and Hout [1996]. This hypothesis was subsequently extended to include the socialist countries by Hanley and McKeever [1997], who used somewhat different reasoning. The core assumption of this hypothesis is that there were two reasons behind the absence of a decrease in socio-economic inequalities in access to higher education during the socialist era:

a) the very slow growth of opportunities in university education prevented the saturation of the demand for higher-level education among groups of the population with traditionally high educational aspirations. Thus, in concurrence with the arguments presented by Raftery and Hout, the tertiary educational system remained highly selective, especially with respect to potential candidates from lower social strata;

b) despite the initial efforts to demonstrate the advantages of the socialist system (an experiment to increase the participation of the lower social strata through the so-called quota system), the new socialist elite soon managed to ensure advantages in attaining higher education for their own children.

Even though some preliminary analyses indicated that a certain reduction of educational inequalities among the social classes took place at the beginning of the socialist era, with such inequalities returning to their initial levels shortly thereafter [Matějů 1986, 1993], our analysis performed on a larger set of data failed to confirm this thesis. The only significant change that took place during the socialist regime was the decrease in the inequalities between men and women, which resulted in a marked drop in the odds for men, due to the overall reduction of educational opportunities. The differences in the odds of making the transition from secondary to tertiary education among individuals with different socio-economic backgrounds, as represented by the father's education, remained unchanged throughout the period. The same applies to both the cultural dimension of social origin as represented by the father's education, and the socio-economic dimension as represented by the father's social class.

With regard to the short period of post-socialist development, the analysis shows that social inequalities in the odds of making the transition between sec-

ondary and tertiary education increased significantly. Such a development was caused by three reciprocally boosting processes:

a) even though the change of the political system created room for the major democratisation and decentralisation of the tertiary system and for the unprecedented growth of educational opportunities at the tertiary level, the autonomy that was granted too early to the universities made it possible to prevent reforms that would have transformed the tertiary education system from 'unitary' to 'binary', and this resulted in its 'elitist' nature becoming virtually 'frozen';

b) the transition to a model of mass tertiary education was retarded by the lack of will on the part of university officials to adopt multi-source financing, which – together with the slow growth of financing for tertiary education from public sources (the Czech Republic remained close to the bottom of the OECD scale) – brought about a severe financial crisis in the tertiary educational system and an actual slowdown in the growth of opportunities (despite the marked slowdown of demographic development in the relevant age group, the share of admitted applicants stabilised at 50 percent in a long-term perspective); as a result of these processes, the competition for making the transition into the tertiary educational system is in the long run enormous;

c) the marked growth of socio-economic inequalities after the first stage of the post-communist transformation brought about the formation of genuine social classes, of which the class of manual workers showed all the signs of being the losers in the post-communist transformation: thus it was possible to expect, in line with the theory of rational action presented by Goldthorpe and Breen [Goldthorpe 1996, Goldthorpe and Breen 1997], that children from the families of manual workers would be the losers in this stiff competition, and that their relative odds of making the transition to tertiary education would be diminishing in comparison to the others.

The analysis confirmed this hypothesis. After 1989, a marked increase of inequalities in access to higher education took place, mainly due to the substantial decrease of the odds of children from manual workers' families. The results of the analysis confirm also that this change originates in the socio-economic dimension of the inequalities, as presented by Goldthorpe, rather than in the socio-cultural dimension, as stressed by proponents of the theory of cultural capital, as the effect of the father's education remained constant. All this indicates that there occurred an increase of inequalities in access to higher education in the Czech Republic after 1989, and that this increase was caused by factors that can be called *structural*: be it the rigid structure of the tertiary educational system or the gradually shaping class structure of the society.

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## Appendix

**Table A1. Distributions of variables used in the analysis**

Variable	COH						
		→1948	1948-64	1965-74	1975-89	1990-99	Total
RED3	LSEC	76.3	63.8	59.6	48.9	54.5	59.3%
	HSEC	17.4	24.9	28.5	36.8	38.5	29.7%
	TERT	6.3	11.3	11.9	14.3	7.0	11.0%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
SUCC	0 – no	73.5	68.3	70.2	70.5	58.6	68.3%
	1 – yes	26.5	31.7	29.8	29.5	41.4	31.7%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
FED3	LSEC	92.0	83.1	73.1	64.7	53.4	72.8%
	HSEC	4.9	13.6	19.5	24.6	29.8	19.1%
	TERT	3.1	3.3	7.3	10.7	16.7	8.1%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
FCL4	UW	38.2	40.8	38.4	32.8	31.7	36.6%
	SW	24.5	29.8	31.1	33.1	29.4	30.3%
	NM	32.2	22.2	16.5	19.0	21.4	20.9%
	PROF	5.1	7.2	14.1	15.1	17.5	12.2%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
SEX	MEN	38.5	45.6	47.0	46.5	51.0	46.1%
	WOMEN	61.5	54.4	53.0	53.5	49.0	53.9%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

### Specification of logit models in SPSS

#### Model I

LOGLINEAR SUCC(0,1) BY COH(1,5) FED3(1,3) SEX(1,2)  
 /CONTRAST (COH) = REPEATED  
 /CONTRAST (FED3) = POLYNOMIAL  
 /DESIGN = SUCC SUCC BY COH(2) SUCC BY COH(4)  
 SUCC BY FED3(1) SUCC BY SEX  
 SUCC BY COH(2) BY SEX

#### Model II

LOGLINEAR SUCC(0,1) BY COH(1,5) FCL4(1,4) SEX(1,2)  
 /CONTRAST (COH) = REPEATED  
 /CONTRAST (FCL4) = REPEATED  
 /DESIGN = SUCC SUCC BY COH(2) SUCC BY COH(4)  
 SUCC BY FCL4 SUCC BY SEX  
 SUCC BY COH(4) BY FCL4(1)  
 SUCC BY COH(2) BY SEX

**Model III**

LOGLINEAR SUCC(0,1) BY COH(1,5) FED2(1,4) FCL2(1,2)  
/CONTRAST (COH) = REPEATED  
/DESIGN = SUCC SUCC BY COH(4)  
SUCC BY FED2 SUCC BY FCL2  
SUCC BY COH(4) BY FCL2